Docket No. 915-007.056
Serial No. 10/705,759



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re Application of:

Jan HIRSIMAKI

Serial No.: 10/705,759 Examiner: Umar CHEEMA

Filed: November 10, 2003 Group Art Unit: 2144

For: IMPROVING THE TRANSMISSION PERFORMANCE OF A TRANSPORT LAYER PROTOCOL CONNECTION

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

## PRE-APPEAL BRIEF REQUEST FOR REVIEW

Sir:

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Lorraine F. Kniffin

Dated: March 17, 2008

REMARKS

The Examiner states that the present invention is exemplified by claim 1 and covers a method for improving transmission performance of a transport land protocol connection that uses a data transmission service of a bearer, comprising:

A. monitoring transport layer data traffic in relation to transmission capacity of said transport layer protocol connection, and

B. dynamically adjusting said transmission capacity of said bearer according to said monitored data traffic of said transport layer protocol connection,

C. wherein said bearer provides uplink and downlink transmission capacity,

D. wherein said data traffic of said transport control protocol connection comprises uplink and downlink data traffic that is separately monitored, and

E. wherein said uplink and downlink transmission capacity is at least partially separately adjusted according to said monitored respective uplink and downlink data traffic,

F. wherein said uplink and downlink data traffic is at least partially asymmetric.

Independent device claim 17, independent mobile terminal claim 20 and independent system claim 33 have similar limitations.

The Examiner states that although the primary reference *Takagi et al* does not "explicitly" disclose, it "substantially" discloses the subject matter recited in the preamble as well as features A, B, C, D, E, and F.

The Examiner does not specifically identify what part of claim 1 is not explicitly disclosed by the primary reference and what part is substantially disclosed or why the reference substantially discloses the invention but not explicitly.

The Examiner only refers to the abstract and column 3, lines 65-67 and column 4, lines 1-10. These passages refer to enabling control of the transport layer connection according to the radio communication "state" between the radio terminal and the base station without changing implementation of the transport layer of a terminal connected to a wire network.

These passages refer to "state" in the sense shown in Figure 30 of *Takagi et al* where throughput may be lowered during handoff because there is a need to give information regarding "states" of transport layers in the wire section and the radio section to a new gateway, so as to establish a "state" capable of relaying the TCP

connection for that radio terminal at the new gateway. See column 2, lines 26-37 and column 3, lines 46-62 where it is pointed out that in such a situation of shifting the gateway function from one gateway handling the TCP connection to another gateway, there is a possibility for falling into an unstable state at the time of shifting that function depending on the "state" of the original gateway.

The solution disclosed by *Takagi et al* is to enable control of the transport layer connection according to the radio communication state between the radio terminal and the base station without changing implementation of the transport layer of the terminal connected to the wired network (thereby preserving the TCP as universally used in wired networks). *Takagi et al* does this by setting up a connection in divided form of first and second connections in the transport layer protocol. On the one hand, communications are established with the radio network using a radio-oriented TCP protocol and on the other with the wired network using the regular TCP protocol so that the TCP connection is established in divided form. See column 4, lines 16-34. The shifting is then carried out only if the two connections are in established states (see column 5, lines 3-5).

The *Takagi et al* reference does not have anything to do with dynamically adjusting a transmission capacity of a bearer according to monitored data traffic of a transport layer protocol.

Although it is true that *Takagi et al* also tries to alleviate congestion on the uplink in an asymmetric communication path (where there is a narrow bandwidth in the uplink and a wide bandwidth on the downlink), it does not do this by adjusting a transmission capacity. *Takagi et al* describes Bandwidth being allocated (in a fixed way) with more throughput allocated in the downlink direction than in the uplink direction (col. 11, lines 31-32). This is advantageous in cases where the mobile terminal downloads huge amounts of data from the core network, as for instance in the case with web-browsing or similar applications but only a little capacity is needed on the uplink. See paragraph [0016] on page 2 of the publication of the present application US 2005/0102412.

In such a situation, using the transmission control protocol, which was designed for reliable wired networks, an inordinate number of (negative) acknowledgement messages sometimes need to be sent on the uplink for the wireless

connection because of the lesser reliability of the wireless link than the wired link. The TCP was invented with the reliability of the wired network in mind and was not invented for the wireless environment. In a case where the narrow "pipe" of the uplink is overwhelmed by acknowledgement traffic, this tends to adversely affect the downlink as well.

*Takagi et al* does not "substantially" solve this problem in anything like the same way as the present invention since there is no dynamic adjustment of the transmission capacity in *Takagi et al* but rather a splitting of the connection into a divided form of first and second connections. By doing this, *Takagi et al* is able to use a "selective acknowledgement" approach (col. 11, line 26) on the wireless part of the divided connection and use the regular TCP approach on the wired side as it was designed for. This leads to a reduction in the volume of (negative) acknowledgements especially where acknowledgements are not so important for some types of applications.

The features relied upon by the Examiner in pointing to *Apisdorf* and *Ahmed* are not clear. However, the Examiner points to same for disclosing monitoring transport layer data traffic in relation to transmission capacity of the bearer according to the monitored data traffic of the transport layer protocol connection (pointing to *Apisdorf* at the abstract and column 1, lines 5-10, 63-67), and dynamically adjusting the transmission capacity of the bearer according to the monitored data traffic of the transport layer protocol connection (pointing to *Apisdorf* at column 1, lines 49-60).

*Apisdorf et al* show a multi-protocol monitoring system 10 for monitoring a network link 46 (see Fig. 1) carrying information in optical form on a network optical link, for example, a synchronous optical network (SONET). This disclosure shows a traffic monitoring circuitry 34 in Fig. 2 that is basically a sniffer that has its main use in capturing packets from sniffed links and using the "sniffed" information to conduct "use case analysis" or "scenario analysis" or the like for use in object oriented design methodologies (see column 10, lines 36-40) in order to discover the capabilities the system must have. The results of the monitoring of the network optical link 46 provides many useful functions including network security and traffic engineering (see column 3, line 8 and line 19). In this way, other methods may be

found for traffic handling that may be more effective than the methods currently being used.

The *Ahmed et al* reference has been cited at column 8, lines 10-26 and Fig. 1 for showing a bearer providing uplink and downlink transmission capacity in a system 100 (Fig. 1) where not only the mobile stations 102 have the ability to move but also the network nodes 104 have that ability. There are wireless links 106 between the network nodes 104 and the mobile stations 102 and point-to-point wireless links 110 between the network nodes 104. The cited passage at column 8, lines 10-27 discusses a MAC layer protocol employed on top of a physical layer "to allow meaningful statistical sharing of bandwidth among the large number of mobile terminals 102 that could potentially be attempting to access the system through a network node." But this does not have anything to do with improving transmission performance of a transport layer protocol connection that uses a data transmission service of a bearer by dynamically adjusting the transmission capacity of the bearer according to monitored data traffic of the transport layer protocol connection. The tunnelling citations at column 3, lines 20-28 and column 8, lines 10-26 and column 11, lines 35-43 have to do with tunnelling the transient packets in a handover situation so that transient packets can be forwarded and prevent routing loops from forming. It has nothing to do with dynamic adjustment of transmission capacity.

The present invention deals with a problem in that service providers allocate the downlink "pipe" with wide bandwidth and the uplink "pipe" with narrow bandwidth because the assumption is that the consumer will be doing much more downloading than uploading. The present invention solves problems associated with this kind of setup by allowing dynamic adjustment of the transmission capacity thereof. The prior art does not do this.

Reconsideration and withdrawal of the obviousness rejection is requested.

Respectfully submitted,

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